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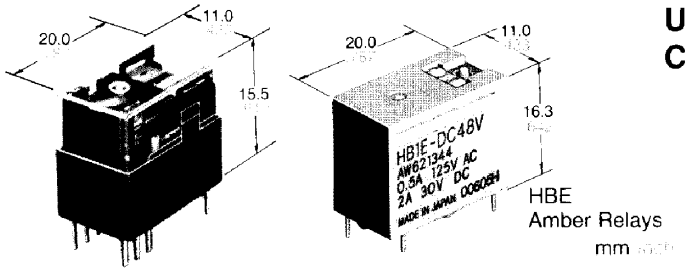
Jameco Part Number 18577

NAiS

COST SAVING SUBMINIATURE DIP RELAY

HB-RELAYS



HBE
Amber Relays
mm

UL File No.: E57520
CSA File No.: LR26550

- **Small size for increased packaging density**
- **Sensitive—Very low operating power**
- **Simple mechanism for stable quality—only 7 pieceparts**
- **DIP—matching 16 pin IC socket**
- **Contact capacity—1 A 125 V AC, 2 A 30 V DC**
- **Amber sealed versions available**

SPECIFICATIONS

HB Standard type

Contacts

Arrangement	1 Form C, 2 Form C
Contact material	Silver-nickel
Initial contact resistance, max. (By voltage drop 6 V DC 1 A)	100 mΩ
Rating (resistive load)	
Max. switching power	125 VA, 60 W
Max. switching voltage	125 V AC, 30 V DC
Max. switching current	2 A
UL/CSA rating	1 A, 1/20 HP 125 V AC, 2 A 30 V DC
Expected life (min. operations)	
Mechanical	10^7
Electrical (resistive)	
1 A 125 V AC, 2 A 30 V DC	2×10^5

Coil

Minimum operating power	(1C) 230 mW, (2C) 370 mW
Nominal operating power	(1C) 360 mW, (2C) 576 mW

Characteristics

Maximum operating cycles	20 cpm
Operate time* (at nominal voltage)	Approx. 5 m sec.
Release time* (at nominal voltage)	Approx. 5 msec.
Initial insulation resistance	more than 100 MΩ at 500 V DC
Breakdown voltage	
Between open contacts	500 Vrms
Between contact sets	500 Vrms
Between contacts and coil	1,000 Vrms
Temperature rise (at nominal voltage)	Max. (1C) 45°C, (2C) 55°C
Ambient temperature	−40°C to +50°C
Shock resistance	98 m/s² (10G)
Vibration resistance	58.8 m/s² (6G), 10 to 55 Hz at double amplitude of 1 mm
Unit weight	8 g

*Excluding contact bounce time

HBE Amber sealed type

Contacts

Arrangement	1 Form C, 2 Form C
Contact material	Gold-clad over Silver-nickel
Initial contact resistance, max. (By voltage drop 6 V DC 1 A)	100 mΩ
Rating (resistive load)	
Max. switching power	62.5 VA, 60 W
Max. switching voltage	125 V AC, 30 V DC
Max. switching current	0.5 A AC, 2 A DC
UL/CSA rating	1 A, 1/20 HP 125 V AC, 2 A 30 V DC
Expected life (min. operations)	
Mechanical	10^7
Electrical (resistive)	
0.5 A 125 V AC, 2 A 30 V DC	2×10^5

Coil

Minimum operating power	(1C) 230 mW, (2C) 370 mW
Nominal operating power	(1C) 360 mW, (2C) 576 mW

Characteristics

Maximum operating cycles	20 cpm
Operate time* (at nominal voltage)	Approx. 5 m sec.
Release time* (at nominal voltage)	Approx. 5 m sec.
Initial insulation resistance	more than 100 MΩ at 500 V DC
Breakdown voltage	
Between open contacts	500 Vrms
Between contact sets	500 Vrms
Between contacts and coil	1,000 Vrms
Temperature rise (at nominal voltage)	Max. (1C) 50°C, (2C) 60°C
Ambient temperature	−40°C to +50°C
Shock resistance	98 m/s² (10G)
Vibration resistance	58.8 m/s² (6G), 10 to 55 Hz at double amplitude of 1 mm
Unit weight	8 g

TYPICAL APPLICATIONS

Office machines, electrical home appliances, telecommunications equipment, personal computers

ORDERING INFORMATION

Ex. HB | 2 | E | DC5V

Contact arrangement	Type classification	Coil voltage
1: 1 Form C 2: 2 Form C	Nil: Dust cover type E: Amber sealed type	DC 3, 5, 6, 9, 12, 24, 48 V

(Notes) Standard packing Carton: 100 pcs., Case: 500 pcs. or 2,000 pcs.

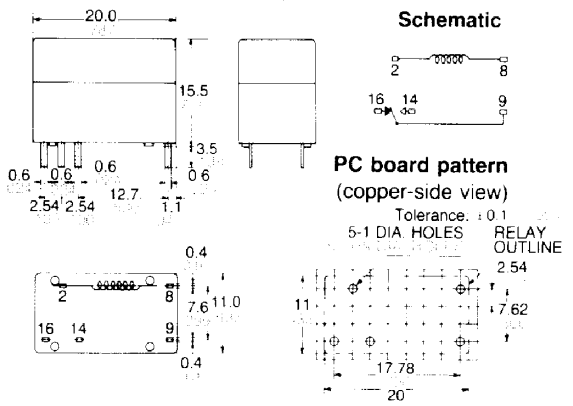
TYPES AND COIL DATA at 20°C

Part No.	Nominal voltage, V DC	Pick-up voltage, V DC (max.)	Drop-out voltage, V DC (min.)	Nominal operating current, mA (±10%)	Nominal operating power, mW	Coil resistance, Ω (±10%)	Maximum allowable voltage, V DC
HB1-DC3V HB1E-DC3V	3	2.4	0.3	120	360	25	3.6
HB1-DC5V HB1E-DC5V	5	4.0	0.5	72	360	69	6.0
HB1-DC6V HB1E-DC6V	6	4.8	0.6	60	360	100	7.2
HB1-DC9V HB1E-DC9V	9	7.2	0.9	40	360	225	10.8
HB1-DC12V HB1E-DC12V	12	9.6	1.2	30	360	400	14.4
HB1-DC24V HB1E-DC24V	24	19.2	2.4	15	360	1,600	28.8
HB1-DC48V HB1E-DC48V	48	38.4	4.8	8	384	6,000	57.6
HB2-DC3V HB2E-DC3V	3	2.4	0.3	192	576	15.6	3.6
HB2-DC5V HB2E-DC5V	5	4.0	0.5	115	576	43.4	6.0
HB2-DC6V HB2E-DC6V	6	4.8	0.6	96	576	62.5	7.2
HB2-DC9V HB2E-DC9V	9	7.2	0.9	69	623	130	10.8
HB2-DC12V HB2E-DC12V	12	9.6	1.2	48	576	250	14.4
HB2-DC24V HB2E-DC24V	24	19.2	2.4	24	576	1,000	28.8
HB2-DC48V HB2E-DC48V	48	38.4	4.8	12	576	4,000	57.6

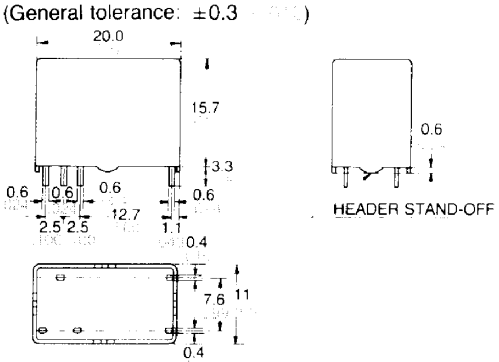
DIMENSIONS

mm

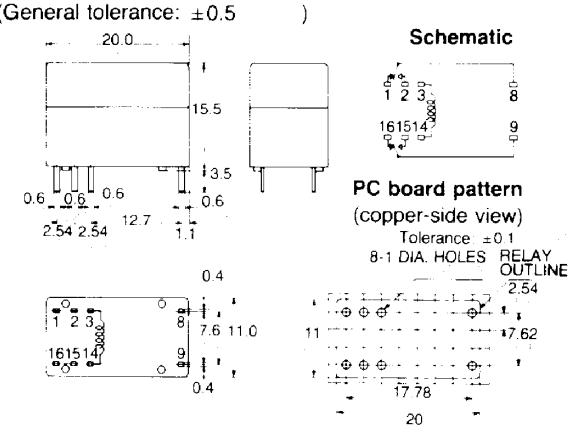
HB1 (General tolerance: ±0.5)



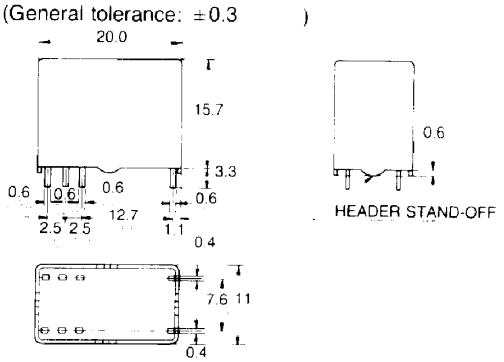
HB1E (General tolerance: ±0.3)



HB2 (General tolerance: ±0.5)

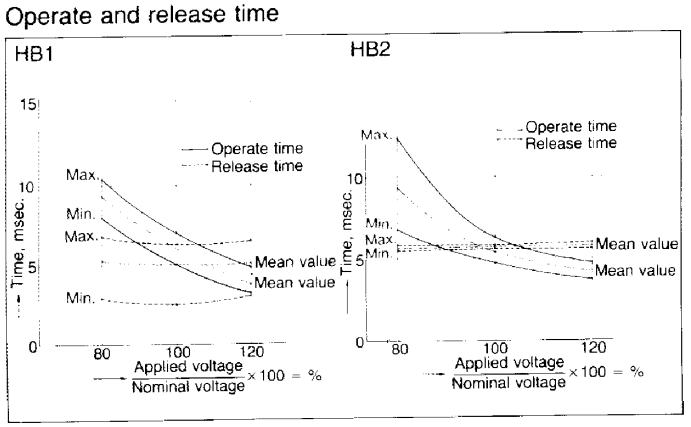


HB2E (General tolerance: ±0.3)

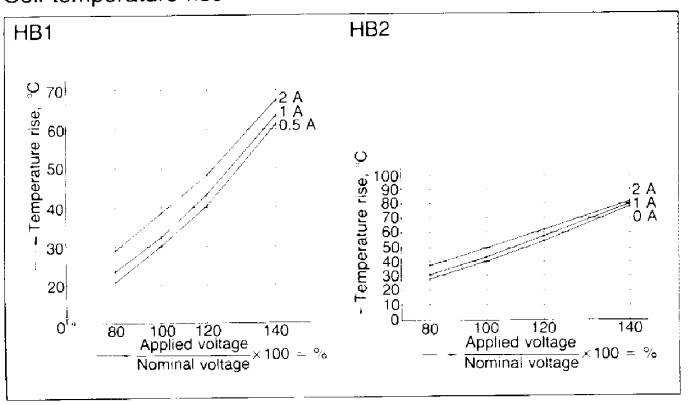


DATA

Operate and release time

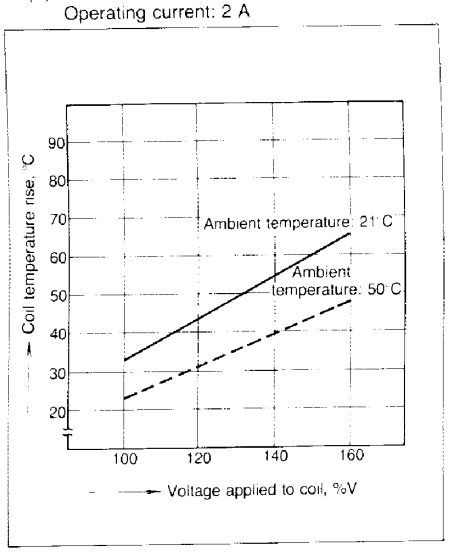


Coil temperature rise



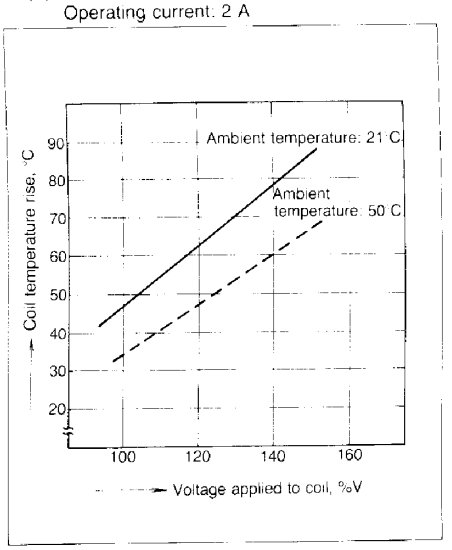
1.-(1) Coil temperature rise (HB1E)

Operating current: 2 A

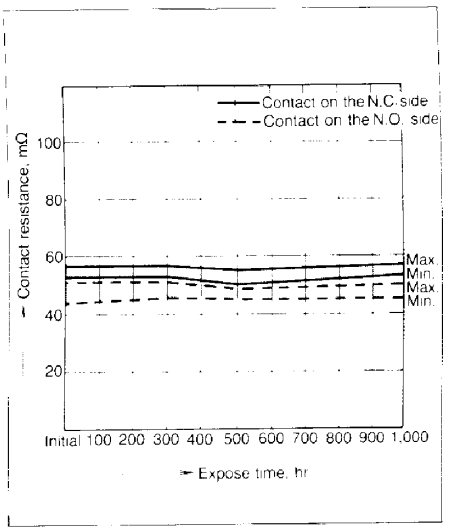


1.-(2) Coil temperature rise (HB2E)

Operating current: 2 A



2. Exposure to H_2S gas



3. Minute-load test for HB amber relay

1. Load: 10 V DC 1 mA resistive load
2. Detection level: 50 Ω
3. Sample: HB2E-12VDC
4. Sample quantity: 5 pcs. (Contact quantity 20)
5. Result: After switching is repeated 10 million times.
   No improper contact is observed.
   Trouble rate at 60% reliability level (at 10 millionth time)
   $\lambda_{60} = 0.18 \times 10^{-6}$ (pcs./time)